



## SAN BERNARDINO MICROWAVE SOCIETY, Incorporated

FOUNDED IN 1966

A NON-PROFIT AMATEUR TECHNICAL ORGANIZATION DEDICATED  
TO THE ADVANCEMENT OF COMMUNICATIONS ABOVE 1000 MC.

### W6IFE Newsletter

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The **2 March 2000** meeting of the SBMS will have Gordon Huff, WA6FMX, talk on solid-state T/R circuits. The SBMS meets at the American Legion Hall 1024 Main Street (south of the 91 freeway) in Corona, CA at 1900 hours local time on the first Thursday of each month. Check out the SBMS web site at <http://www.ham-radio.com/sbms/>.

REMINDER Nominations for SBMS 2000-2001 officers will take place in March and the election in April.

Last meeting John Stephensen, KD6OZH had a great tech talk about the design of low noise oscillators. His 38-page handout was overwhelming. Thanks for the super talk. . Visitors were Merritt Martin, KD6WKS of Adelanto and George Schrock, KF6NVO of Hesperia. Welcome! John, KE6JVV; Bill, WA6QYR; and Doug, K6JEY had equipment for sale and some giveaways. 26 present.

#### Scheduling-

4 Mar. SBMS Dinner at the Cask and Cleaver in Victorville, CA with a social at 6 pm and dinner at 7 pm.

6 Apr. TBD

4 May TBD

May sometime, a joint measurement party with San Diego Microwave Group?

10-12 June VHF QSO Party

President Jeff Fort is planning the annual SBMS Dinner on 4 March at Cask and Cleaver Restaurant 13885 Park Ave. in Victorville, CA 760-241-7318. A social will start at 6 p.m. followed by dinner at 7 p.m. See enclosed map. Please note the restaurant is next to and can be seen from the I-15 freeway, but is some 100 yards off of the street. There is a big sign on Park Avenue showing where to turn in to the parking lot. Jeff will be taking a head count at the 2 March meeting.

### **Wants and Gots for Sale**

Want two 4CX400A 's Bob Gardner W6SYA 818-248-3683

Want WR-42 90-degree twist and waveguide switch Dave WA6CGR 909-318-5154.

Want a heavy-duty tripod for new dish, Mel WA6JBD 909-369-6515

Activity reported at the February 1999 SBMS meeting- Dick, WB6DNX had cleaned up his shack; Chuck, WA6EXV is finishing up modifications to his 10 ft EME dish and making schematic of the "TV tuners" from last months visit by Kerry, N6IZW; Bill, WA6QYR worked on an older motorhome TVRO az/el mount and the TV tuners; Mel, WA6JBD finished his 24 GHz gunnplexer temperature controller box; Doug, K6JEY, worked on a new Shepard crook feed; Jim, K6ML is having cable TVI problems at his new QTH; Ken, WB6DTA is collecting 3.4 and 5.6 GHz gear; Kurt, K6RRA has been drilling holes in circuit boards; Alicia, KF6WMX has been hitting the books; Jeff, KN6VR attended a meeting of the San Diego Microwave Group and was impressed at the stuff Kerry, N6IZW has; John, KJ6HZ tuned up a gunnplexer.

Larry, K6HLH reported a phone number change 661-264-3126.

. "TV tuners". At the January 2000 SBMS meeting Kerry, N6IZW, brought in some surplus "TV tuners", Toshiba model CVA-151 (RCA connectors) and CVA-113 (F connectors). These have a number of surface mount parts inside and everyone was encouraged to take several home. The now defunct "Ham Radio Magazine" had a series of articles on various spectrum analyzers, electronically tuned receivers and things that could be done with excess TV tuners. Ham Radio September 1986 page 82, March 1987 page 99, September 1987 page 49, September 1988 page 84, and Communications Quarterly premier issue fall 1990 all had something to do with the basic TV tuner. The older tuners had a VHF and a UHF section that allowed receiving signals from 50 to 300 MHz and 500 to 800 MHz. IF outputs were in the 45 MHz range. This set of articles added the 3089 FM receiver on a chip plus an audio amp to make a panadaptor, spectrum analyzer, or tunable receiver from the basic circuits in the first article to the addition of computer control and spectrum analysis in the last modifications article. More recently "73 Amateur Radio Today" magazine had a 3 part series by Hugh Wells, W6WTU, on "TV/ VCR Tuner Applications" in the April 1997 page 18, May 1997 page 36, and June 1997 page 30 issues. Wells indicates the newer "cable ready" tuners cover 45 MHz to 900 MHz with an IF of 47 MHz for the TV units and 63 MHz for the VCR units. Again with the marriage of either some chips or another IF receiver and sweep circuits or a pot, one could build some interesting receivers from junk box parts. The tuners from the SBMS meeting appear to only cover 30 to 400 MHz. But there are some interesting circuits inside. They seem to have an input filter, a VCO, a prescaler, and mixer in the first module. A 600 MHz filter, narrow tunable VCO, mixer and some filtered output amplifiers in the second module. See Chuck's drawings.

The first module VCO tunes 500 to 1100 MHz. The prescaler divides the VCO by 64 in the CVA-151 and by 256 in the CVA-113 and provides a TTL output. The mixer provides a 600 MHz output to the second module from the combination of the input signal and the VCO. Applying +12v to pins B1 and B3 power up the devices. B2 for the prescaler wants to be +5v. . The prescaler TTL output is on pin PS. The first VCO tuning voltage is applied to pin VT and can range from zero volts (500 MHz VCO frequency) to about 25v for 1100 MHz. The VCO is quite stable for the amount of circuitry inside.

The second module has a VCO that operates 560 to 570 MHz with application of zero to 25v on pin AFC. The output circuit bandwidth is close to 20 MHz to accommodate the full TV signal spectrum. These tuners appear to be built for cable or similar operations where high-level signals are present so if one wants to use it for a receiver, some preamplification needs to be added in front of the tuner.

Another use of the tuner might be as a signal generator. If one were to strip out the front-end filters and replace them with an MMIC, one could couple the strong VCO signals to the "input" connector via a buffer amplifier. Using the prescaler and a HF counter one could display the signal generators frequency (divided by which scale factor tuner you have). Another signal generator version could take the AFC VCO signal into the first module mixer. This way the mixer output would be near DC to 500 MHz. Thus you could have a voltage tunable signal generator covering from DC to 1100 MHz with two tuner units. Have fun. Bill, WA6QYR

73's Bill



**Bryan, W6BY on Mount Diablo in 1997. Photo via George, K6MBL files**

San Bernardino Microwave Society is a technical amateur radio club affiliated with the ARRL having a membership of over 90 amateurs from Hawaii and Alaska to the east coast. Dues are \$15 per year, which includes a badge and monthly newsletter. Your mail label indicates your call followed by when your dues are due. Dues can be sent to the treasurer Your mail label indicates your call followed by when it is time to renew your dues. Dues can be sent to the treasurer as listed under the banner on the front page. If you have material you would like in the newsletter please send it to Bill WA6QYR at 247 Rebel Road Ridgecrest, CA 93555, [bburns@ridgecrest.ca.us](mailto:bburns@ridgecrest.ca.us), or phone 760-375-8566. The newsletter is generated about the 15th of the month and put into the mail at least the week prior to the meeting. This is your newsletter. SBMS Newsletter material can be copied as long as SBMS is identified as source.

San Bernardino Microwave Society newsletter

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USA

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